Swine Vesicular Disease

Importance
Swine vesicular disease (SVD) has almost identical clinical signs to foot-and-mouth disease, but is only seen in pigs. Neither disease is present in North America. Differentiation of these two vesicular diseases is important, as the introduction of foot-and-mouth disease could cause severe economic losses.

Etiology
Swine vesicular disease virus (SVDV) is a porcine enterovirus in the family Picornaviridae. It is antigenically related to the human enterovirus Coxsackie B-5 and unrelated to other known porcine enteroviruses.

Species affected
Pigs are the only species that are naturally infected. Humans have been infected while working in a laboratory setting. Baby mice can be experimentally infected.

Geographic distribution
While SVD has been seen in Italy, England, Scotland, Wales, Malta, Austria, Belgium, France, the Netherlands, Germany, Poland, Switzerland, Greece, and Spain, the disease has been eradicated from all European countries. SVD still remains in many countries in the Far East.

Transmission
Transmission can occur by ingestion of contaminated meat scraps and contact with infected animals or infected feces. Pigs can excrete the virus from the nose, mouth, and feces up to 48 hours before clinical signs are seen. Virus can be shed in the feces for up to 3 months following infection.

SVDV can survive for long periods of time in the environment. This virus is resistant to heat up to 157°F (69°C) and pH ranging from 2.5-12. It can also survive up to 2 years in lymphoid tissue contained in dried, salted, or smoked meat.

Incubation period
The incubation period is 2-7 days following exposure to infected pigs and 2-3 days after the ingestion of contaminated feed.

Clinical signs
The clinical signs of swine vesicular disease are very similar to foot-and-mouth disease, and include fever, salivation, and lameness. Vesicles and erosions can be seen on the snout, mammary glands, coronary band, and interdigital areas. Vesicles in the oral cavity are relatively rare. The infection may be subclinical, mild, or severe depending on the virulence of the strain. Severe signs are generally seen only in pigs housed on damp concrete. Younger animals can be more severely affected. Neurological signs due to encephalitis are rare. These include shivering, unsteady gait, and chorea (rhythmic

jerking) of the legs. Abortion is not typically seen. Recovery occurs within 2-3 weeks with little permanent damage.

Post mortem lesions

The only post-mortem lesions are the vesicles that can be seen in live pigs. These lesions are similar to those of other vesicular diseases, including foot-and-mouth disease.

Morbidity and Mortality

Swine vesicular disease is considered to be moderately contagious. Compared to foot-and-mouth disease, morbidity is lower and the lesions are less severe. Mortality is not generally a concern with swine vesicular disease.

Diagnosis

Clinical

Swine vesicular disease or other vesicular diseases should be suspected when vesicles or erosions are found on the mouth and/or feet of pigs. In swine vesicular disease outbreaks, pigs will be the only species affected, the lesions will be mild, and there will be no mortality. Other vesicular diseases must be ruled out with laboratory tests.

Differential diagnosis

Differentials for swine vesicular disease include foot-and-mouth disease, vesicular stomatitis, vesicular exanthema of swine, and chemical or thermal burns.

Laboratory tests

SVDV can be identified using enzyme-linked immunosorbent assay (ELISA), the direct complement fixation test, and virus isolation in pig-derived cell cultures. Virus neutralization and ELISA can be used for serological diagnosis.

Samples to collect

Before collecting or sending any samples from animals with a suspected foreign animal disease, contact the AVIC. These samples should only be sent under secure conditions, by authorized personnel, and to authorized laboratories to prevent the spread of disease. Since vesicular diseases can not be distinguished clinically, and some are zoonotic, samples should be collected and handled with all appropriate precautions. Samples include vesicular fluid, the epithelium covering vesicles, esophageal-pharyngeal fluid, unclotted whole blood collected from febrile animals, and fecal and serum samples from infected and non-infected animals.

Recommended actions if swine vesicular disease is suspected

Notification of authorities

State and federal veterinarians should be immediately informed of any suspected vesicular disease. Federal: Area Veterinarians in Charge (AVICS)
http://www.aphis.usda.gov/vs/area_offices.htm
State vets: http://www.aphis.usda.gov/vs/sregs/official.html

Quarantine and Disinfection
Infected farms or areas should be quarantined. Infected pigs and those in contact with them should be slaughtered and disposed of. The premises should be thoroughly cleaned and disinfected. In the presence of organic matter, sodium hydroxide (1% combined with detergent) can be used. Oxidizing agents and iodophors used with detergents work well for personal disinfection in the absence of gross organic matter.

Public health
Seroconversion and mild clinical disease with one case of meningitis has been seen in laboratory workers.

For More Information
World Organization for Animal Health (OIE)
http://www.oie.int

OIE Manual of Standards
http://www.oie.int/eng/normes/mmanual/a_summry.htm

OIE International Animal Health Code
http://www.oie.int/eng/normes/mcode/A_summry.htm

USAHA Foreign Animal Diseases book
http://www.vet.uga.edu/vpp/gray_book/FAD/

Manual for the Recognition of Exotic Diseases of Livestock
http://www.spc.int/rahs/

References
Mebus C.A. “Swine Vesicular Disease.” In *Foreign Animal Diseases.* Richmond, VA: United States Animal Health Association, 1998, pp. 392-395.

“Swine Vesicular Disease.” In *Manual of Standards for Diagnostic Tests and Vaccines.* Paris: World Organization for Animal Health, 2000, pp. 100-104.

Swine Vesicular Disease. Disease Lists and Cards. *World Organization for Animal Health.* <http://www.oie.int>.

“Swine Vesicular Disease.” In *Manual for the Recognition of Exotic Diseases of Livestock: A Reference Guide for Animal Health Staff.* Food and Agriculture Organization of the United Nations, 2002. 21 April 2003 <http://www.spc.int/rahs/Manual/Porcine/SVDE.HTM>.